

New records of *Clytoctantes alixii* (Elliot, 1870) in Eastern Caldas, Colombia

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Academic editor: A.M. Leal-Zanchet | Received 21 January 2020 | Accepted 13 June 2020 | Published 6 July 2020

Citation: Gil-Ospina RF, Moreno-López D (2020) New records of *Clytoctantes alixii* (Elliot, 1870) in Eastern Caldas, Colombia. *Neotropical Biology and Conservation* 15(3): 201–207. <https://doi.org/10.3897/neotropical.15.e50325>

Abstract

Clytoctantes alixii is a bird that lives on the edges of old-growth, secondary and cleared forests undergoing regeneration and presents a distribution restricted to Colombia and Venezuela. The species is considered to be at risk of extinction (EN) due to its particular characteristics and restricted distribution. However, knowledge of its ecology and distribution is still incipient. The objective of this study was therefore to expand the knowledge of *C. alixii* in Caldas, present the southernmost record of the species and describe its behaviour. The species was monitored within the protected areas of the Manso Diversion in the period 2014 and 2017, using mist nets and fixed radius point counts. Two individuals of *C. alixii* were recorded, both by observation, with one of these subsequently also captured in a forest in an advanced state of succession. Recording of this population is important because it is the southernmost in the Cordillera Central and confirms that habitats with the presence of hollow stem plants largely define the presence of the species, as well as potentially determining the location of other populations of this species within its range of distribution.

Keywords

extinction risk, conservation, Cordillera Central, protection, southernmost record

Introduction

Clytoctantes alixii (Elliot, 1870), the recurve-billed bushbird, is a near-endemic resident bird species with a distribution restricted to northern Colombia and the adjacent zone of Venezuela and within an elevation range of 180 to 1600 m a.s.l. It

belongs to the group of antbirds (Hilty and Brown 2001; Laverde and Stiles 2007; Ayerbe 2018) and its diet mainly comprises insects and other arthropods (Restall et al. 2006; Ridgely and Tudor 2009). This is a rare and local species found in the dense understoreys of old-growth, secondary and cleared forests undergoing regeneration (Hilty and Brown 2001; Restall et al. 2006; Laverde and Stiles 2007).

The natural history of this species is little known, although it is unmistakable throughout its range of distribution due to its large, curved and compressed bill (Ridgely and Tudor 2009). Originally described at the end of the 19th century, it was not recorded until 1914 in the Central Cordillera of the Colombian Andes, in the northern region of Antioquia, where several individuals were collected in Puerto Valdivia (Chapman 1926; Collar et al. 1992). For 60 years, there were no further records of the species and it was not until 2005 that it was recorded once again in the Department of Norte de Santander (Laverde and Stiles 2007) and, subsequently, in two more locations in the Departments of Antioquia and Santander (Colorado 2008). The last record of this species in the Department of Caldas was obtained in the year 1951 in La Sofía, in the Municipality of Samaná in the eastern part of the Department (Hilty and Brown 2001).

The species has been categorised both nationally and internationally as being in danger of extinction (EN) (IUCN 2016; Renjifo et al. 2016; Birdlife International 2017). The armed conflict in Colombia, together with the inconspicuous nature of the species and a lack of knowledge regarding its vocalisation, acted to impede the re-discovery of this species that, judging by the large quantity of museum specimens and its observation over a wide and diverse area, was once quite common (Birdlife International 2017). However, a slow and continual decline of the population is suspected due to the fact that it has lost around 57% of its habitat through land use conversion to agriculture, gold extraction and the establishment of illicit crops (Collar et al. 1992; Renjifo et al. 2002, 2016). Increased knowledge of the species, its ecology and distribution are therefore fundamental to its long-term survival and for the establishment of suitable conservation measures in the zones where it is still present.

Materials and methods

Study area

The study area is located on the eastern flank of the Central Cordillera of Colombia, between the Municipalities of Norcasia and Samaná (5°36'N, 74°57'W; Figure 1A). Its elevation ranges from 500 to 800 m a.s.l. (Cardona et al. 2010) and it presents an approximate area of 462 ha in wooded zones undergoing regeneration and in mature forests, under the protection of ISAGEN (a private company that generates and markets energy), with a mountainous relief and high and scarped slopes (Cardona et al. 2010; Andrade et al. 2013). Three sites were sampled; the first was Portal de Entrada, which hosted a plant community with mature forest species, while the other two were Santa Bárbara and Predio Horizontes, comprising areas of grasses and cropland that had been abandoned 10 years previously and in which early regeneration was taking place (Figure 1A).

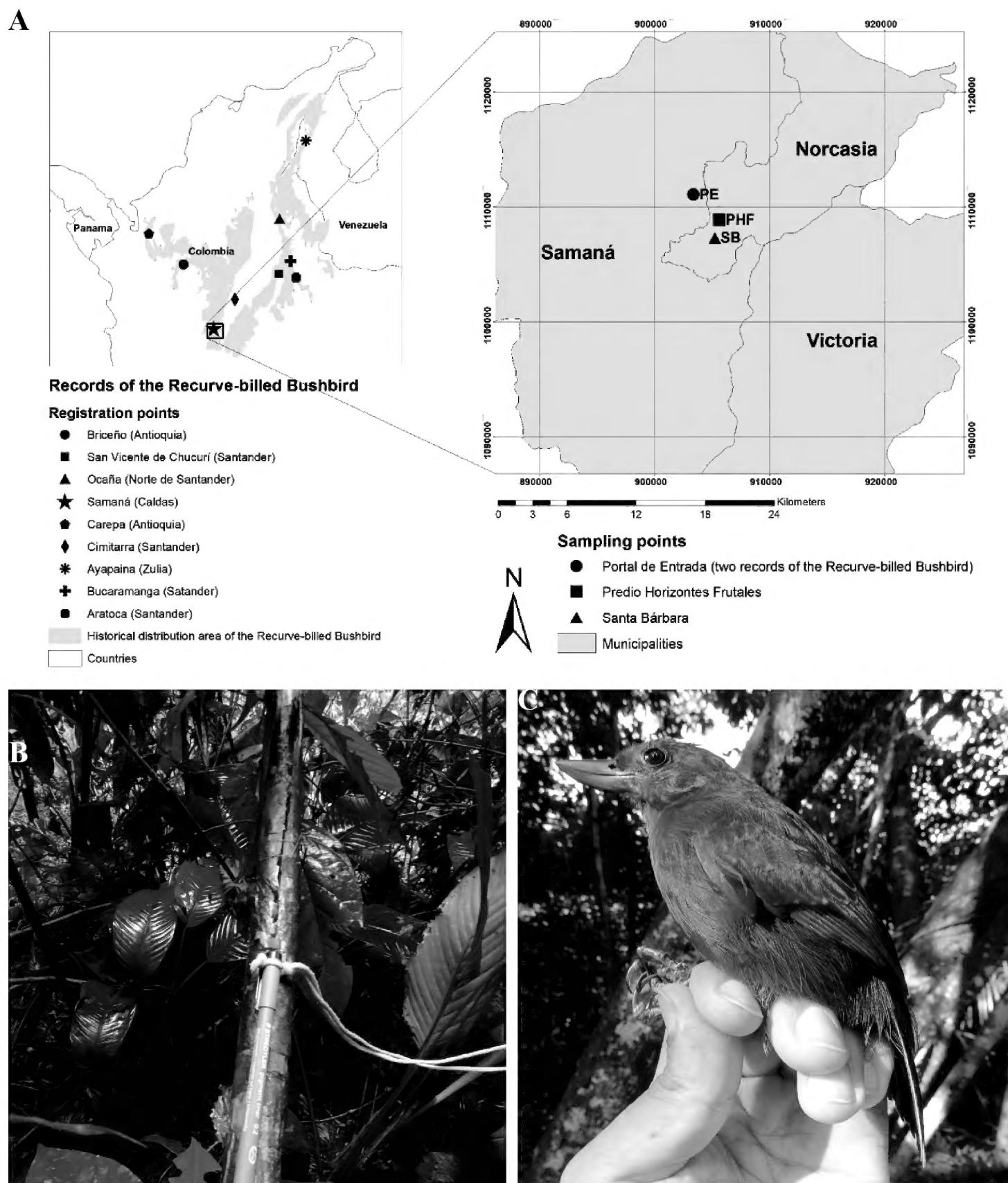


Figure 1. A. Sampling sites; B. Cut made by a male in search of insects in the stem of a plant of the genus *Costus*; C. Adult female captured in the same habitat.

Data collection

For recording the species between 2014 and 2017, two widely-used techniques were used for bird sampling: mist netting and fixed radius point counts (Barlow et al. 2007). For each sampling procedure in the study area, six capture points were established, each with five mist nets (12 m × 2 m × 3 cm). These were randomly located at each of the three study sites and set between 6:00 and 11:00 h in order to record both morphometric and phenological data. Regarding the fixed radius point counts,

eight points were established for each site, each with a duration of 15 min, a radius of 25 m and a minimum distance between points of 150 m (Bibby et al. 2000; Barlow et al. 2007), in which to make observations regarding the behaviour of the species.

Results

During the four years of sampling, two individuals were recorded, both by direct observation while performing foraging activities in the count points, with one of these subsequently also captured ($5^{\circ}36'28.0''N$, $74^{\circ}57'14.3''W$, 744 m a.s.l.), from a total sampling effort of 4874 h/net for the mist nets and 5040 minutes for the fixed radius point counts. The first record was made on 20 May 2014 when a male was found with either a female or an immature individual on the edge of a stream in search of insects on a plant of the genus *Costus* (Costaceae). The male made a cut from the base to the mid part of the plant as part of its foraging activity (Figure 1B).

The second record was made on 17 January 2016 when an adult female was captured in a mist net. This individual had an egg in its oviduct and presented no moulting on the body or wings (Figure 1C). The morphometric measurements of this individual were: closed wing length of 75 mm, tail length of 59 mm, tarsus length of 22.4 mm, exposed culmen length of 19.1 mm and corporal weight of 41.2 g. This female was captured at a distance of 200 m from where it was initially recorded.

Discussion

The records reported here are the first made of the recurve-billed bushbird in Caldas since 1951 (Hilty and Brown 2001; Renjifo et al. 2002; Colorado 2008; Renjifo et al. 2016). Both records were made in the same habitat in the forest of Portal de Entrada, a site in an advanced stage of succession adjacent to a steeply sloping watercourse. This adds to previously-known habitats of the species, namely secondary vegetation and forest edges (Laverde and Stiles 2007; Colorado 2008). Notably, this is the southernmost location at which the species has been recorded since its re-discovery, at 185 km to the south of Puerto Valdivia, the last site in which the species was recorded in the Central Cordillera (Colorado 2008). Recent records of the species in the Municipality of Carepa in Antioquia and in the Municipalities of Aratoca, Cimitarra and Bucaramanga in Santander have been made available on the E-bird platform, indicating that the species is more abundant and widely distributed than previously thought.

Our findings suggest that, contrary to previous reports (Hilty and Brown 2001; Laverde and Stiles 2007), the reproduction period of this species can begin in January. Likewise, the reproductive status found by Laverde and Stiles (2007) suggests that the species could have reproduced in months prior to July, coinciding with that found in this study. The measurements of the species taken in this study agree with those found by Laverde and Stiles (2007) who, in their measurements for an adult female, reported an exposed culm of 20.4 mm, closed wing length of 72.1 mm, tail length of 53.9 mm, tarsus length of 21.1 mm and body mass of 32.5 g. However, our

data show slight variations (exposed summit 19.1 mm, closed wing length 75 mm, tail length 59 mm, tarsal length 22.4 mm and body mass 41.2 g). The most notable differences (in the length of the closed wing and the length of the tail) could have been due to the active moult presented by the female collected on 30 July 2005 by Laverde and Stiles (2007). Furthermore, the female captured in this investigation weighed almost 10 g more, which can be explained by the presence of the egg in its oviduct since, as a general rule, the presence of the egg itself acts to increase the bodyweight of the female (Rahn et al. 1975).

For individuals of this species, there seems to be a relationship with plants with hollow stems, perhaps where arthropods accumulate or where the soft bark is easy to open with their beaks. Furthermore, the stems on which they feed are generally dead, as living stems do not harbour as many arthropofauna as those that are in a state of decomposition or are simply easier to open (Laverde and Stiles 2007). This confirms that habitats with the presence of hollow stem plants, such as bamboo or sour cane, largely define the presence of the species, as well as potentially determining the location of other populations of the species within its distribution range.

The low rate of records over the four-year sampling period illustrates the rarity of this species and also demonstrates that the site in which they were recorded fulfils the basic requirements for subsistence of the species, in contrast to the situation in the other two sampling zones. This may be since it is a rare and local bird with specific habitat and dietary requirements, which makes it more susceptible to threat through habitat loss (Colorado 2008).

Conclusions

The discovery of this population allows recognition of *C. alixii* as a priority species for conservation and research in Caldas, Colombia. This is the second population in the Cordillera Central and the southernmost record of the species following its re-discovery, which makes the area of considerable importance for conservation of the species. In addition, the relationship of the species with hollow stem plants is emphasised, even in environments where it has not previously been reported, which furthers our understanding of the factors that affect the presence of the species within its range of distribution and allows us to conclude that the risk faced by *C. alixii* is, in fact, lower than previously thought. Finally, increasing knowledge of the species is of vital importance since, at present, there is an important gap in the information regarding its ecology, distribution and natural history.

Acknowledgements

This research was conducted under the framework of the monitoring of avifauna impacted by the diversion of the River Manso. We thank the University of Caldas and ISAGEN for funding the project of monitoring the wild vertebrate fauna in zones of influence of the productive centres of ISAGEN in eastern Caldas (Convention No 47/623). We also thank all of the working team of this project.

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